

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method of providing a multimedia data service, for user equipment which is capable of movement amongst a plurality of cells served by respective base stations of a radio access network, ~~the method being characterised by comprising:~~

providing the multimedia data service to each of said cells (a) on a point-to-multipoint basis without requiring a Radio Resource Control connection, (b) on a point-to-multipoint basis while requiring a Radio Resource Control connection, or (c) on a point-to-point basis; and

controlling at least one Radio Network Controller such that, when a user equipment moves from a first cell to a second cell, it is detected whether a Radio Resource Control connection is required in the second cell, and a suitable connection is established in said second cell to allow said user equipment to receive the multimedia data service, wherein at least one of the first and second cells provides the multimedia data service on a point-to-multipoint basis without requiring a Radio Resource Control connection.

2. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point- to-multipoint basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the method comprises:

sending a SIGNALLING CONNECTION RELEASE INDICATION message from the user equipment to the serving Radio Network Controller.

3. (Original) A method as claimed in claim 2, wherein the SIGNALLING CONNECTION RELEASE INDICATION message indicates the movement of the user equipment into said second cell as the cause of the request.

4. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the method comprises:
releasing the Radio Resource Control connection of said user equipment, such that said user equipment no longer requires a serving Radio Network Controller;
continuing point-to-multipoint transmission of the multimedia data service data from a controlling Radio Network Controller for said user equipment; and
releasing an lu interface between a previous serving Radio Network Controller and said controlling Radio Network Controller for said user equipment.

5. (Original) A method as claimed in claim 4, further comprising:
determining whether said previous serving Radio Network Controller still requires a bearer connection to receive said multimedia data service data; and
if not, releasing said bearer connection.

6. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection or on a point-to-point basis while requiring a Radio Resource Control connection, the method comprises:

sending a request for a Radio Resource Control connection from the user equipment to the serving Radio Network Controller.

7. (Original) A method as claimed in claim 6, wherein the request for a Radio Resource Control connection indicates the movement of the user equipment into said second cell as the cause of the request.

8. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection or on a point-to-point basis while requiring a Radio Resource Control connection, the method comprises:

establishing a Radio Resource Control connection for said user equipment;
and

said user equipment directly contacting a core network to trigger activation of the multimedia data service for said user equipment.

9. (Original) A method as claimed in claim 8, wherein said user equipment contacts said core network by means of a Routing Area Update message.

10. (Original) A method as claimed in claim 9, wherein, when the multimedia data service in the second cell is provided on a point-to-point basis while requiring a Radio Resource Control connection, further comprising a dedicated channel for transmission of said multimedia data service data to said user equipment.

11. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point to-multipoint

basis while requiring a Radio Resource Control connection or on a point-to-point basis while requiring a Radio Resource Control connection, the method comprises:

- establishing a Radio Resource Control connection for said user equipment, such that said user equipment requires a serving Radio Network Controller;
- said user equipment directly contacting a core network to trigger activation of the multimedia data service for said user equipment; and
- establishing an Iur interface between a serving Radio Network Controller and a controlling Radio Network Controller for said user equipment.

12. (Original) A method as claimed in claim 11, wherein, when the multimedia data service in the second cell is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, the method further comprising:

- establishing a bearer connection from the core network to said serving Radio Network Controller for multimedia data service data; and
- transmitting the multimedia data service data on a point-to-multipoint basis from said serving Radio Network Controller.

13. (Original) A method as claimed in claim 11, wherein, when the multimedia data service in the second cell is provided on a point-to-point basis while requiring a Radio Resource Control connection, the method further comprising:

- establishing a bearer connection from the core network to said serving Radio Network Controller for multimedia data service data; and
- establishing a dedicated channel for transmitting the multimedia data service data on a point-to-point basis from said serving Radio Network Controller to said user equipment.

14. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-point basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the method comprises:

detecting in a serving Radio Network Controller that the Radio Resource Control connection is no longer required.

15. (Original) A method as claimed in claim 14, wherein the step of detecting in the serving Radio Network Controller that the Radio Resource Control connection is no longer required comprises:

performing an attach from the serving Radio Network Controller to a drift Radio Network Controller; and

said drift Radio Network Controller informing said serving Radio Network Controller that it is already providing the multimedia data service without requiring a Radio Resource Control connection.

16. (Original) A method as claimed in claim 14, wherein the serving Radio Network Controller informs the user equipment that it should receive the multimedia data service data on a point-to-multipoint basis.

17. (Original) A method as claimed in claim 14, wherein the serving Radio Network Controller informs the user equipment that it should release its existing radio access bearer for the receipt of the multimedia data service data on a point-to-point basis.

18. (Original) A method as claimed in claim 14, wherein the serving Radio Network Controller informs the user equipment that it should release its existing Radio Resource Control connection.

19. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-point basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the method comprises:

detecting in the user equipment that the Radio Resource Control connection is no longer required.

20. (Original) A method as claimed in claim 19, wherein the step of detecting in the user equipment that the Radio Resource Control connection is no longer required comprises monitoring a multimedia data service System Information Block (SIB).

21. (Original) A method as claimed in claim 19, further comprising releasing the existing Radio Resource Control connection.

22. (Original) A method as claimed in claim 1, wherein, when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is also provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the method comprises:

the user equipment reading the broadcast information relating to the multimedia data service and tuning to a channel on which the data is being transmitted.

23. (Original) A method of establishing a multimedia data service in a cell of a cellular telecommunications network, the method comprising:

sending a request for the multimedia data service from user equipment to a core network;

sending an activation request from the core network to a controlling radio network controller of the user equipment;

in response to the activation request, establishing a bearer connection between the controlling radio network controller of the user equipment and the core network; and

transmitting the multimedia data service data from the controlling radio network controller to the user equipment.

24. (Original) A method as claimed in claim 23, further comprising broadcasting configuration information from the controlling radio network controller in said cell, identifying a channel in which the multimedia data service data is transmitted.

25. (Currently Amended) A method of establishing a multimedia data service in a cell of a cellular telecommunications network, the method comprising:
sending a request for the multimedia data service from user equipment to a core network;
sending an activation request from the core network to a serving radio network controller of the user equipment; and
~~characterised wherein~~ by sending a message from the serving radio network controller to a controlling radio network controller of the user equipment to determine whether the multimedia data service data will be transmitted on a point-to-point or point-to-multipoint basis in said cell.

26. (Original) A method as claimed in claim 25, further comprising, when it is determined that the multimedia data service data will be transmitted on a point-to-point basis in said cell;
establishing a bearer connection between the serving radio network controller and the core network; and
transmitting the multimedia data service data from the serving radio network controller to the user equipment on a point-to-point basis.

27. (Currently Amended) A method as claimed in claim 25-~~or 26~~, further comprising reconfiguring a radio link between the serving radio network controller and the controlling radio network controller of the user equipment.

28. (Original) A method as claimed in claim 25, further comprising, when it is determined that the multimedia data service data will be transmitted on a point-to-point basis in said cell, but is not already being transmitted;
establishing a bearer connection between the controlling radio network controller of the user equipment and the core network; and
transmitting the multimedia data service data from the controlling radio network controller to the user equipment on a point-to-multipoint basis.

29. (Currently Amended) User equipment, for receiving a multimedia data service in a cellular telecommunications network, ~~characterised in that,~~ wherein when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the user equipment is adapted to determine whether it has a signalling connection with the network, and, if it is determined that the user equipment has a signalling connection with the network, the user equipment is adapted to send a SIGNALLING CONNECTION RELEASE INDICATION message to the serving Radio Network Controller.

30. (Original) User equipment as claimed in claim 29, wherein the SIGNALLING CONNECTION RELEASE INDICATION message indicates the movement of the user equipment into said second cell as the cause of the request

31. (Currently Amended) A radio network controller, for use in providing a multimedia data service in a cellular telecommunications network, ~~characterised in that,~~ wherein when a user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the radio network controller is adapted to:

determine whether a serving Radio Network Controller is required for the user equipment, and if it is determined that a serving Radio Network Controller is no longer required, the Radio Network Controller is adapted to:

release the Radio Resource Control connection of said user equipment; such that said user equipment no longer requires the serving Radio Network Controller;

continue point-to-multipoint transmission of the multimedia data service data from a controlling Radio Network Controller for said user equipment; and

release an lu interface between a previous serving Radio Network Controller and said controlling Radio Network Controller for said user equipment.

32. (Original) A radio network controller as claimed in claim 31, further adapted to:

determine whether said previous serving Radio Network Controller still requires a bearer connection to receive said multimedia data service data; and if not, to release said bearer connection.

33. (Currently Amended) User equipment, for receiving a multimedia data service in a cellular telecommunications network, ~~characterised in that,~~ wherein when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, the user equipment is adapted to:

detect that a Radio Resource Control connection is required in the second cell; and

send a request for a Radio Resource Control connection to a serving Radio Network Controller.

34. (Original) User equipment as claimed in claim 33, wherein the request for a Radio Resource Control connection indicates the movement of the user equipment into said second cell as the cause of the request.

35. (Currently Amended) User equipment as claimed in claim 33 ~~or 34~~, the user equipment is further adapted to:

establish the Radio Resource Control connection; and
directly contact a core network to trigger activation of the multimedia data service for said user equipment.

36. (Original) User equipment as claimed in claim 35, wherein said user equipment is adapted to contact said core network by means of a Routing Area Update message.

37. (Currently Amended) A core network node, for use in providing a multimedia data service in a cellular telecommunications network, ~~characterised in that,~~ wherein when a user equipment moves from a first cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis while requiring a Radio Resource Control connection, and contacts the core network to trigger activation of the multimedia data service for said user equipment, the core network node is adapted to:

establish an Iur interface between a serving Radio Network Controller and a controlling Radio Network Controller for said user equipment; and
establish a bearer connection from the core network node to said serving Radio Network Controller for multimedia data service data; such that
the multimedia data service data can be transmitted on a point-to-multipoint basis from said serving Radio Network Controller.

38. (Currently Amended) A radio network controller, for use in providing a multimedia data service in a cellular telecommunications network, ~~characterised in that,~~ wherein when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-point basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided

on a point-to-multipoint basis without requiring a Radio Resource Control connection, the radio network controller acting as a serving Radio Network Controller, is adapted to detect that the Radio Resource Control connection is no longer required.

39. (Original) A radio network controller as claimed in claim 38, wherein the Radio Network Controller is adapted to:

perform an attach to a drift Radio Network Controller; and
receive information from said drift Radio Network Controller that it is already providing the multimedia data service without requiring a Radio Resource Control connection.

40. (Original) A radio network controller as claimed in claim 38, wherein the Radio Network Controller is adapted to inform the user equipment that it should receive the multimedia data service data on a point-to-multipoint basis.

41. (Original) A radio network controller as claimed in claim 38, wherein the Radio Network Controller is adapted to inform the user equipment that it should release its existing radio access bearer for the receipt of the multimedia data service data on a point-to-point basis.

42. (Original) A radio network controller as claimed in claim 38, wherein the Radio Network Controller is adapted to inform the user equipment that it should release its existing Radio Resource Control connection.

43. (Currently Amended) User equipment, for receiving a multimedia data service in a cellular telecommunications network, ~~characterised in that, wherein~~ when the user equipment moves from a first cell in which the multimedia data service is provided on a point-to-point basis while requiring a Radio Resource Control connection, to a second cell in which the multimedia data service is provided on a point-to-multipoint basis without requiring a Radio Resource Control connection, the user equipment is adapted to:

detect that the Radio Resource Control connection is no longer required.

44. (Original) User equipment as claimed in claim 43, wherein the user equipment is adapted to detect that the Radio Resource Control connection is no longer required by monitoring the multimedia data service SIB.

45. (Original) A method of providing a multimedia data service to a user equipment in a UMTS mobile communications network, comprising a Core Network and a UMTS Radio Access Network, the user equipment being capable of movement amongst a plurality of cells served by respective base stations of the Radio Access Network, wherein:

the Core Network informs the respective serving Radio Network Controller of the Radio Access Network about a user equipment that wants to receive a specific Multimedia Broadcast/Multicast Service (MBMS);

the Core Network enables the Radio Access Network to track user equipments receiving MBMS services in RRC Connected Mode; and

the Radio Access Network determines whether to use point-to-multipoint, or point-to-point, transmission of data relating to said MBMS service, for users in RRC Connected Mode.